



INDIANA  
DEPARTMENT of  
EDUCATION

## 2023-2024 Secondary STEM Certification Additional Artifacts Showcase Rubric

Domain 1: Culture						
Element	Investigating	Initiating	Approaching	Innovating	Element Score	Evidenced By:
	0 points	1 point	2 points	3 points		
D1: Sustainability Plan	Does not yet meet minimum indicators for developing.	There is a two-year STEM certification sustainability plan in place, including funding sources for both technology and STEM curriculum and training needs due to staff turnover.	There is a three-year STEM certification sustainability plan in place, identifying funding sources for both technology and STEM curriculum and training needs due to staff turnover.	There is a five-year STEM certification sustainability plan in place, identifying funding sources for both technology and STEM curriculum and training needs due to staff turnover.		<b>Required:</b> <ul style="list-style-type: none"><li>•Technology plan;</li><li>•Curriculum funding plan; and</li><li>•Training plan.</li></ul> <i>(Documentation should include a plan to sustain programming/equipment/training for five years of certification.)</i>
D1: Measurement of Students' Attitudes/Interests	Does not yet meet minimum indicators for developing.	Informal methods are used to measure students' attitudes toward STEM and/or interest in STEM classes/career pathways. The school's STEM program is revised, as needed, based upon analysis of this data.	Formal measurement of students' attitudes toward STEM and/or interest in STEM classes/career pathways are measured on an annual basis. The school's STEM program is revised, as needed, based upon analysis of this data.	Formal measurement of students' attitudes toward STEM and/or interest in STEM classes/career pathways are measured at least two times per school year. The school's STEM program is revised, as needed, based upon analysis of this data.		<b>Required:</b> <ul style="list-style-type: none"><li>•Example of survey used, such as the Student Attitudes Toward STEM (S-STEM) Survey <b>and/or</b> STEM Semantics Survey <b>and/or</b> Test of Science Related Attitudes (TOSRA) <b>and/or</b> a locally-created survey;</li><li>•Analysis of each survey's data;</li><li>•Detailed description of revisions based upon data analysis; and</li><li>•At least one full year of survey data.</li></ul> <b>Additional Evidence:</b> <ul style="list-style-type: none"><li>•Career Interest Questionnaire.</li></ul>
D1: Access to STEM Courses and Programs	Does not yet meet minimum indicators for developing.	Students are enrolled in Advanced Placement (AP), Dual Credit, Next Level Programs of Study (NLPS), and other advanced courses in STEM and enrollment is within 75% of the demographic of the defined STEM program in Essential Element 1.	Students are enrolled in AP, Dual Credit, NLPS, and other advanced courses in STEM and enrollment is within 90% of the demographic of the defined STEM program in Essential Element 1.	Students are enrolled in AP, Dual Credit, NLPS, and other advanced courses in STEM and reflects the demographic of the defined STEM program in Essential Element 1.		<b>Required:</b> <ul style="list-style-type: none"><li>•Course offerings with defined STEM program;</li><li>•School schedule for the defined STEM program;</li><li>•STEM enrollment data for defined STEM program with comparison to overall student body data (e.g., special education status, gender, race, economically disadvantaged, etc.); and</li><li>•Schedule showing how STEM time is "protected" from pull-outs for special programming. (e.g., Title I, Resource, Remediation, etc.)</li></ul>
D1: STEM Program Analysis	Does not yet meet minimum indicators for developing.	School STEM leadership team meets twice a year. Minutes should reflect team discussions on enrollment in STEM classes and that the students in STEM classes are being guided into appropriate pathways.	School STEM leadership team meets quarterly. Minutes should reflect team discussions on enrollment in STEM classes and that the students in STEM classes are being guided into appropriate pathways.	School STEM leadership team meets monthly. Minutes should reflect team discussions on enrollment in STEM classes and that the students in STEM classes are being guided into appropriate pathways.		<b>Required:</b> <ul style="list-style-type: none"><li>•Meeting minutes that include an agenda, participant list, discussion topics, and next steps.</li><li>•Mechanism used to help students track progressions through STEM programming towards graduation.</li></ul>
Culture Score:					0	
Domain 2: Curriculum						
Element	Investigating	Developing	Approaching	Innovating	Element Score	Evidenced By:
	0 points	1 point	2 points	3 points		
D2: Student Portfolio Option	Does not yet meet minimum indicators for developing.	One percent of students enrolled in the defined STEM program complete a portfolio that documents collaboration, creation, reflection, communication, growth in employability skills, and presentation of work completed throughout their STEM course sequences and/or pathway while addressing graduation requirements.	Five percent of students enrolled in the defined STEM program complete a portfolio that documents collaboration, creation, reflection, communication, growth in employability skills, and presentation of work completed throughout their STEM course sequences and/or pathway while addressing graduation requirements.	Ten percent of students enrolled in the defined STEM program complete a portfolio that documents collaboration, creation, reflection, communication, growth in employability skills, and presentation of work completed throughout their STEM course sequences and/or pathway while addressing graduation requirements.		<b>Required:</b> <ul style="list-style-type: none"><li>• One digital portfolio link per identified student in the defined STEM program.</li><li>• Inventory of digital portfolio links, STEM course sequence or pathway, student choice for the second graduation requirement.</li></ul>
D2: Employability Skills	Does not yet meet minimum indicators for developing.	Employability Skills Standards, based upon the appropriate grade band, are integrated into the curriculum for 50% of students enrolled in the defined STEM program courses.	Employability Skills Standards, based upon the appropriate grade band, are integrated into the curriculum for 75% of students enrolled in the defined STEM program courses.	Employability Skills Standards, based upon the appropriate grade band, are integrated into the curriculum for all students enrolled in the defined STEM program courses.		<b>Required:</b> <ul style="list-style-type: none"><li>•Curriculum maps/program summary.</li></ul> <b>Additional Evidence:</b> <ul style="list-style-type: none"><li>•Samples of unit/lesson plans;</li><li>•Samples of student products; and</li><li>•Samples of rubrics.</li></ul>

<b>D2: Access and Opportunity for All Learners</b>	Does not yet meet minimum indicators for developing.	General education teachers create STEM materials for diverse learners based upon their understanding of students' academic needs.	Special education teachers and support services teachers (High Ability, English as a New Language, Interpreters, etc.) and provide accommodations and/or adaptations of STEM materials for diverse learners based upon their understanding of students' academic needs.	General education teachers and appropriate special education teachers and support services teachers (High Ability, English as a New Language, Interpreters, etc.) and collaboratively plan for necessary STEM material development and refinement for diverse learners based upon their understanding of students' academic needs.		<b>Required:</b> <ul style="list-style-type: none"> <li>•Samples of collaborative lesson plans with planned supports.</li> <li>•Description of collaborative work.</li> </ul> <b>Additional Evidence:</b> <ul style="list-style-type: none"> <li>•Meeting agenda(s).</li> <li>•Guidance documents.</li> </ul>
<b>D2: Assessments</b>	Does not yet meet minimum indicators for developing.	50% of teachers use a variety of assessment methods - formal and informal, formative and summative - to monitor and evaluate both STEM learning and instructional effectiveness.	75% of teachers use a variety of assessment methods - formal and informal, formative and summative - to monitor and evaluate both STEM learning and instructional effectiveness.	All teachers use a variety of assessment methods - formal and informal, formative and summative - to monitor and evaluate both STEM learning and instructional effectiveness.		<b>Required:</b> <ul style="list-style-type: none"> <li>•Samples of a variety of assessments;</li> <li>•Samples of feedback provided to students; and</li> <li>•Samples of rubrics.</li> </ul> <b>Additional Evidence:</b> <ul style="list-style-type: none"> <li>•Samples of student products.</li> </ul>
<b>D2: Student Voice</b>	Does not yet meet minimum indicators for developing.	One student is actively involved in defining, curating, and implementing processes and procedures needed for STEM Certification.	Two students are actively involved in defining, curating, and implementing processes and procedures needed for STEM Certification.	At least three students are actively involved in defining, curating, and implementing processes and procedures needed for STEM Certification.		<b>Required:</b> <ul style="list-style-type: none"> <li>•Examples of student involvement (e.g., action plans, artifacts of implementation.)</li> <li>•Samples of student reflection based on involvement.</li> </ul>
<b>Curriculum Score:</b>					<b>0</b>	

<b>Domain 3: Instruction</b>
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Element	Investigating	Developing	Approaching	Innovating	Element Score	Evidenced By:
	0 points	1 point	2 points	3 points		
<b>D3: STEM Instructional Approach Implementation</b>	Does not yet meet minimum indicators for developing.	At least 25% of teachers in the defined STEM program use a STEM instructional approach in the context of solving a real-world problem or challenge.	At least 50% of teachers in the defined STEM program use a STEM instructional approach in the context of solving a real-world problem or challenge.	At least 75% of teachers in the defined STEM program use a STEM instructional approach in the context of solving a real-world problem or challenge.		<b>Required:</b> <ul style="list-style-type: none"> <li>•Samples of unit/lesson plans;</li> <li>•Curriculum maps; and</li> <li>•List/calendar of teachers in the defined STEM program implementing problem-based learning (PBL)/inquiry-based learning (IBL)/STEM integration and frequency.</li> </ul> <b>Additional Evidence:</b> <ul style="list-style-type: none"> <li>•Samples of student products.</li> </ul>
<b>D3: Student Instructional Work Groups</b>	Does not yet meet minimum indicators for developing.	At least two times per month and in at least 50% of classes, students work in groups as follows: 1) Students collaborate with peers based upon STEM project/intended outcomes. 2) Each group member has at least one well-defined assigned role that is critical to successful project/goal completion. 3) Accountability is measured and recorded for each individual as well as the entire group.	At least one time per week and in at least 50% of classes, students work in groups as follows: 1) Students collaborate with peers based upon STEM project/intended outcomes. 2) Each group member has at least one well-defined assigned role that is critical to successful project/goal completion. 3) Accountability is measured and recorded for each individual as well as the entire group.	At least twice per week and in at least 50% of classes, students work in groups as follows: 1) Students collaborate with peers based upon STEM project/intended outcomes. 2) Each group member has at least one well-defined assigned role that is critical to successful project/goal completion. 3) Accountability is measured and recorded for each individual as well as the entire group.		<b>Required:</b> <ul style="list-style-type: none"> <li>•Samples of unit/lesson plans;</li> <li>•Defined student roles/responsibilities plans;</li> <li>•Group and individual accountability plans; and</li> <li>•Complete roster of instructional staff in the defined STEM program implementing STEM approach and frequency of group work.</li> </ul> <b>*Evidence provided must support the metric.</b> <b>Additional Evidence:</b> <ul style="list-style-type: none"> <li>•Group assignment processes;</li> <li>•Samples of rubrics; and</li> <li>•Examples of student voice in roles.</li> </ul>
<b>D3: Common Language</b>	Does not yet meet minimum indicators for developing.	Common language is developed as a crosswalk between workplace offerings provided by specialists and PBL instructional strategies for 25% of the offerings in the defined STEM program.	Common language is developed as a crosswalk between workplace offerings provided by specialists and PBL instructional strategies for 50% of the offerings in the defined STEM program.	Common language is developed as a crosswalk between workplace offerings provided by specialists and PBL instructional strategies for 75% of the offerings in the defined STEM program.		<b>Required:</b> <ul style="list-style-type: none"> <li>•Common language crosswalk for workplace offerings.</li> <li>•Explanation and support documentation for creation of common language and future implementation practices.</li> </ul>
<b>D3: Regional programming</b>	Does not yet meet minimum indicators for developing.	STEM programming is selected to benefit students in the region of the state where the programming is located. One required piece of evidence is provided. 1) Research was conducted to inform programming decisions and documentation is provided. 2) Three letters of support from regional partners are provided that indicate STEM programming aligns to regional needs. 3) Data is provided to show that students are placed into postsecondary pathways aligned with regional partners. 4) A document showing regional needs are met using a correlation guide that highlights programming and enrollment.	STEM programming is selected to benefit students in the region of the state where the programming is located. Two required pieces of evidence are provided. 1) Research was conducted to inform programming decisions and documentation is provided. 2) Three letters of support from regional partners are provided indicate STEM programming aligns to regional needs. 3) Data is provided to show that students are placed into postsecondary pathways aligned with regional partners. 4) A document showing regional needs are met using a correlation guide that highlights programming and enrollment.	STEM programming is selected to benefit students in the region of the state where the programming is located. Four required pieces of evidence are provided. 1) Research was conducted to inform programming decisions and documentation is provided. 2) Three letters of support from regional partners are provided indicate STEM programming aligns to regional needs. 3) Data is provided to show that students are placed into postsecondary pathways aligned with regional partners. 4) A document showing regional needs are met using a correlation guide that highlights programming and enrollment.		<b>Required:</b> <ul style="list-style-type: none"> <li>•Research was conducted to inform programming decisions and documentation is provided.</li> <li>•Three letters of support from regional partners are provided.</li> <li>•Data is provided to show that students are placed into postsecondary pathways aligned with regional partners.</li> <li>•A document showing regional needs are met using a correlation guide that highlights programming and enrollment.</li> </ul>
<b>Instruction Score:</b>					<b>0</b>	

<b>Domain 4: Partnerships</b>
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Element	Investigating	Developing	Approaching	Innovating	Element	Evidenced By:
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Element	0 points	1 point	2 points	3 points	Score	Evidenced By:
<b>D4: Student Recognition</b>	Does not yet meet minimum indicators for developing.	One percent of students enrolled in the defined STEM program receive recognition or awards from nationally-recognized STEM organizations, higher education, industry certifications/credentials, and/or other state agencies.	Three percent of students enrolled in the defined STEM program receive recognition or awards from nationally-recognized STEM organizations, higher education, industry certifications/credentials, and/or other state agencies.	Five percent of students enrolled in the defined STEM program receive recognition or awards from nationally-recognized STEM organizations, higher education, industry certifications/credentials, and/or other state agencies.		<b>Required:</b> •Copy of award notification and/or physical certificate. •Links to work published as a result of student STEM research or copy of publication notification.
<b>D4: STEM Career Exploration</b>	Does not yet meet minimum indicators for developing.	Students in the defined STEM program are given the chance to have direct experiences with STEM professionals and explore STEM careers. The number of students engaged in direct experiences with STEM professionals is within 50% of students indicating interest in similar fields in an annual career interest survey.	Students in the defined STEM program are given the chance to have direct experiences with STEM professionals and explore STEM careers. The number of students engaged in direct experiences with STEM professionals is within 75% of students indicating interest in similar fields in an annual career interest survey.	Students in the defined STEM program are given the chance to have direct experiences with STEM professionals and explore STEM careers. The number of students engaged in direct experiences with STEM professionals reflects the percentages of students indicating interest in similar fields in an annual career interest survey.		<b>Required:</b> •Curriculum summary; •Documentation of participation; and •Documentation of results of career interest survey.  <b>Additional Evidence:</b> •Samples of unit/lesson plans. •Samples of student products.
<b>D4: Community Engagement</b>	Does not yet meet minimum indicators for developing.	One to two local community partners are actively engaged in the STEM program.	Three to four local community partners are actively engaged in the STEM program.	Five or more local community partners are actively engaged in the STEM program.		<b>Required:</b> •List of partners with description of participation/engagement provided by each partner.  <b>Additional Evidence:</b> •Pictures, flyers, etc. of school engagement. (This element is about implementation of support.)
<b>D4: Additional STEM Learning Opportunities</b>	Does not yet meet minimum indicators for developing.	STEM activities such as robotics and engineering clubs, internships, and apprenticeships are available and accessible by at least 10% of students in a defined STEM program on an ongoing basis and participation mirrors school demographics.	STEM activities such as robotics and engineering clubs, internships, and apprenticeships are available and accessible by at least 25% of students in a defined STEM program on an ongoing basis and participation mirrors school demographics.	STEM activities such as robotics and engineering clubs, internships, and apprenticeships are available and accessible by at least 50% of students in a defined STEM program on an ongoing basis and participation mirrors school demographics.		<b>Required:</b> •Summary of opportunities. •Transportation options; and •Demographic summary of participants compared to school demographics.  <b>Additional Evidence:</b> •Calendar of events.
<b>Partnerships Score:</b>					<b>0</b>	

			<b>TOTAL Score:</b>			
Key Terminology						
Term	Definition	Resources				
<b>Community Partners</b>	Business, higher education, community organizations.	<a href="#">Georgia STEM/STEAM Model</a>				
<b>Computer Science</b>	Computer science is defined by the content found in Indiana's Computer Science Standards.	<a href="#">IC 20-30-5-23</a>				
<b>Culture</b>	The way teachers and other staff members work together and the set of beliefs, values, and assumptions they share.	<a href="#">WestED</a>				
<b>Curriculum Integration</b>	The materials and pedagogical strategies used by multidisciplinary teams of teachers collaborate to plan and present related lessons that center around a central theme, issue or problem.	<a href="#">ConnectEd</a>				
<b>Employability Skills Standards</b>	Indiana's Employability Skills Standards allow student to be prepared for the ever-changing needs of today's workforce. The expectation is for students to work through the standards in multi-subject areas. As students move through grade levels, they will work with and experience the standards at those grade bands (K-2, 3-5, 6-8, 9-10, and 11-12). The standards are based on the National Employability Skill Standards from the Office of Career, Technical, and Adult Education (OCTAE), the Indiana Department of Workforce Development's Employability Skills Benchmarks, the Governor's Work Ethic Certificate, and the Indiana Department of Education's Social-Emotional Learning Competencies. The standards are arranged within four key areas: Mindsets (M), Work Ethic (WE), Learning Strategies (LS), and Social and Emotional Skills (SE).	<a href="#">IDOE Resources</a>				
		<a href="#">IC 20-30-5-14</a>				
	A pedagogy that can be used to deliver daily lessons in primary disciplines and beyond. It begins with the teacher presenting the students with a question to explore or having students	<a href="#">American Association for the Advancement of Science Resource</a>				

<b>Inquiry-Based Instruction</b>	with a question to explore or having students develop their own questions. As the students investigate the question, they give priority to evidence that is gathered through research and exploring to formulate explanations that describe their findings based on evidence or collected data. Students connect explanations to their knowledge and current understandings in the discipline and communicate and justify their explanations.	<a href="#">Indiana's Priorities for STEM Education Plan</a>				
<b>Next Level Programs of Study (NLPS)</b>	Next Level Programs of Study (NLPS), aims to improve the consistency, quality, and intentionality of CTE instruction across Indiana.	<a href="#">Career and Technical Education: Programs of Study</a>				
<b>Problem-Based and/or Project-Based Learning (PBL)</b>	A pedagogy that anchors the teaching of disciplinary content in the context of solving a real-world problem or challenge.	<a href="#">Ford NGL</a>				
		<a href="#">PBLWorks</a>				
		<a href="#">Magnify Learning</a>				
		<a href="#">Indiana's Priorities for STEM Education</a>				
<b>Learning Modalities</b>	The continuation of education in the event of a prolonged school closure or student absence.	<a href="#">PBLWorks</a>				
		<a href="#">Developing a Community of Inquiry in Your Blended Classroom</a>				
<b>STEM Education</b>	STEM education is the integration of the science, technology, engineering, and mathematics disciplines with the goal of deploying problem/inquiry-based approaches to teaching and learning in the classroom while developing critical thinking skills and creating pathways to postsecondary and career opportunities.	<a href="#">Indiana's Priorities for STEM Education</a>				
<b>STEM Instruction</b>	The integration of the STEM disciplines with the goal of deploying problem/project/inquiry-based approaches to teaching and learning in the classroom while developing critical thinking skills and creating pathways to postsecondary readiness and career opportunities.	<a href="#">Indiana's Priorities for STEM Education</a>				
		<a href="#">NRC Resource</a>				
<b>STEM Instructional Approach</b>	Accepted STEM instructional approaches referenced in Indiana's Priorities for STEM Education Plan: -Problem-based approaches; -Project-based approaches; and -Inquiry-based approaches.	<a href="#">Indiana's Priorities for STEM Education</a>				
<b>Under-Represented Students</b>	Females, racially and ethnically diverse students, and students with disabilities.	<a href="#">NSF Report</a>				